NON-EVALUATION APPLICATIONS FOR COVARIANCE MATRICES*

by

Donald L. Smith
Applied Physics Division
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439
USA

ABSTRACT

The possibilities for application of covariance matrix techniques to a variety of common research problems other than formal data evaluation are demonstrated by means of several examples. These examples deal with such matters as fitting spectral data, deriving uncertainty estimates for results calculated from experimental data, obtaining the best values for plurally-measured quantities, and methods for analysis of cross section errors based on properties of the experiment. The examples deal with realistic situations encountered in the laboratory, and they are treated in sufficient detail to enable a careful reader to extrapolate the methods to related problems.

*This work supported by the U.S. Department of Energy.